SCOTTSDALE TRANSPORTATION COMMISSION REPORT

To: **Trails Subcommittee**
From: **Greg Davies, Senior Transportation Planner**
Subject: **Bicycle Signal Detection**
Meeting Date: **November 5, 2013**

ITEM IN BRIEF

Action: Information

Purpose:

Provide an update of bicycle signal detection implementation in the city of Scottsdale

Background:

Bicycle detection is used at actuated traffic signals (signals that provide green lights when vehicles are detected) to alert the signal system of bicycle crossing demand on a particular approach. Bicycle detection occurs by either manual push buttons or automated devices (e.g., inductive loops, video cameras, infrared, microwave, and magnetometers). The goal is to accurately detect bicycles and provide clear guidance to bicyclists on how to actuate detection.

In April 2013, investigation toward a Bicycle Detection Program began. Bicycle detection vendors explained that inductive loops and video cameras are the most widely used automated bicycle detection technologies.

Of four surveyed agencies, two use video detection, one uses inductive loops, and one uses both. All four agencies also use push-buttons at some locations.

Currently, Scottsdale has magnetometer detection sensors on Pima Road at Via De Ventura, and push-buttons on Sweetwater Avenue at Scottsdale Road.

We believe automated bicycle detection is appropriate in Scottsdale.

Bicycle detection costs for a typical four-approach intersection are:

Manual push-buttons	$4,000
In-pavement, radio-control	$8,000
Magnetometer sensors	$14,000
In-pavement inductive loop	$16,000
Video camera	$25,000

The Bikeways Program will purchase video camera detection in FY2014/15 for Oak Street at Scottsdale Road and for Miller Road at McDowell Road to determine the applicability of this technology in Scottsdale.

Staff Contact: Greg Davies, 480-312-7829, gdavies@scottsdaleaz.gov

Bicycle Signal Detection

Trails Subcommittee

November 5, 2013

City of Scottsdale Existing Bicycle Network

- Bike Lanes – 126 miles
- Bike Routes – 121 miles
- Shared Use Paths – 90 miles
- Paved Shoulders – 8 miles

What is Bicycle Signal Detection?

- Detection of bicycles via specialized technology
- The ability to detect only bicycles
- Provides green light for bicycles
- Safely accommodates bicyclists at signalized intersections

Types of Bicycle Signal Detection

Current…

- Manual Push Buttons
- Inductive Loops
- Video Camera

Emerging…

- MicroRadar™ (new technology)
- Infrared
- Microwave
- Magnetometers

Bicycle Signal Detection Technologies

- Push button

  Exists at one location –
  Sweetwater Avenue at Scottsdale Road

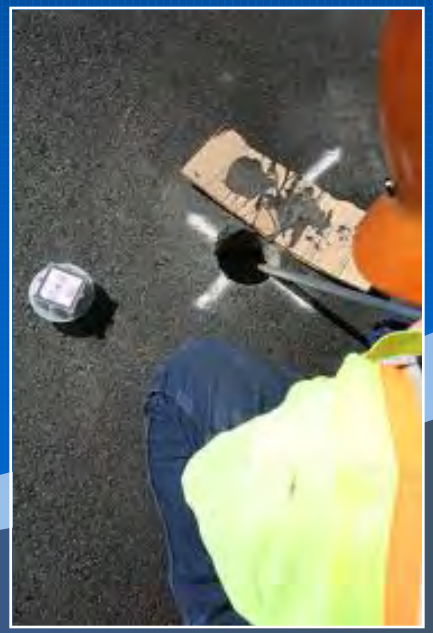
- Inductive Loops

CITY OF SCOTTSDALE

Bicycle Signal Detection Technologies Continued

- Video Camera

- MicroRadar™
- Magnetometer



Advantages

Push Button
- High visibility
- Durable

Inductive Loops
- All weather detection
- Reliable

Video Camera
- Easy to relocate detection zones
- Can detect any object

MicroRadar™/ Magnetometer
- Radio controlled/wireless
- Easy installation

Disadvantages

Push Button

- Inconvenient to bicyclists at dedicated right turns
- Susceptible to collision damage

Inductive Loops

- Ineffective if bicyclists unaware of location
- May not detect all types of bicycles

Video Camera

- Heavy weather conditions may reduce effectiveness
- Higher cost

MicroRadar™/ Magnetometer

- Uncertain reliability due to new technology
- Existing issues with Sensys sensors

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What's Next

- Install Video Detection at Two Test Locations
  - Oak Street at Scottsdale Road
  - Miller Road at McDowell Road
- Continue Research

Autoscope Encore by Econolite

Questions or Comments